NON-PUBLIC?: N
ACCESSION #: 8909270133
LICENSEE EVENT REPORT (LER)

FACILITY NAME: Big Rock Point Plant PAGE: 1 OF 3

DOCKET NUMBER: 05000155

TITLE: Reactor Trip Resulting from Turbine Control Failure
EVENT DATE: 08/22/89 LER #: 89-008-00 REPORT DATE: 09/21/89

OTHER FACILITIES INVOLVED: DOCKET NO: 05000

OPERATING MODE: N POWER LEVEL: 074

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR SECTION:
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
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Big Rock Point

COMPONENT FAILURE DESCRIPTION:
CAUSE: B SYSTEM: TA COMPONENT: BLL MANUFACTURER: G080
REPORTABLE NPRDS: N

SUPPLEMENTAL REPORT EXPECTED: No

ABSTRACT:

On August 22, 1989 the unit was operating at approximately 74 percent power following start-up from the Refueling Outage a week earlier. At 0635 hours, Operators noticed a slow reactor pressure increase and adjusted the Initial Pressure Regulator to restore pressure to normal. At 0645 hours, reactor pressure increased rapidly causing a reactor trip on High Neutron Flux. All control rods inserted and plant cooling was maintained with the main condenser. No Engineered Safety Systems other than the Reactor Protection System were actuated during the event.

Cause of the trip was a rapid closure of the turbine admission valves due to gross leakage in the Turbine Initial Pressure Regulator bellows assembly. After repair of the bellows assembly and successful testing, the plant was restarted on August 22, 1989 at 2211 hours.

MI0989-0370B-BX01

END OF ABSTRACT

Description of Event

On August 22, 1989, the plant was operating at approximately 74 percent power during power escalation following start-up from the Refueling Outage a week earlier. At 0635 hours, Control Room Operators noticed a slow reactor pressure increase (1333 psig to 1336 psig) and adjusted the Turbine Control Initial Pressure Regulator (TA) to restore pressure to normal. This occurred three (3) times over a ten minute period. After a fourth adjustment, reactor pressure increased rapidly causing a reactor trip on High Neutron Flux at 0645 hours. All Control Rods (AA) fully inserted and plant cooldown commenced using the Main Condenser (SG). At 1421 hours the Main Condenser was removed from service and the Shutdown Cooling System (BO) was placed in service to maintain the primary system in hot standby. Following repairs to the Turbine Control Initial Pressure Regulator and testing, reactor start-up was initiated at 2211 hours.

Cause

The Big Rock Point turbine design utilizes an Initial Pressure Regulator to control the Turbine Admission Valves (V) in the turbine follow mode. As the Initial Pressure Regulator sensing bellows (BLL) sees a pressure increase resulting from a power increase it opens the turbine admission valves to maintain reactor pressure. The setpoint of the regulator can be adjusted but is set at a nominal 1335 psig.

Following investigation and testing it was determined that a leak developed in the regulator sensing bellows. The leak was initially very small causing slight admission valve closure and resulting pressure increase which required operators to adjust to restore to normal. When the leak became gross, the admission valves abruptly closed causing a prompt reactor pressure increase. Reactor power increased due to reduction in void content resulting in the reactor trip on High Neutron Flux.

Subsequent inspection and pressure testing in the Consumers Power laboratory identified a "pin hole" leak in the bellows which would not allow pressurization. This would have caused admission valve closure.

Corrective Actions Taken

Following determination of the leakage, a new bellows and gasket was installed in the regulator assembly. Pressure testing was also completed after assembly to verify integrity of the regulator.

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Corrective Actions To Prevent Recurrence

The bellows which failed was new and only in service for approximately two weeks. Further laboratory analysis will be conducted to determine failure mechanism. Additional actions if prudent will be determined following completion of the failure analysis.

Pressure testing of the bellows assembly will be conducted each refueling outage to monitor performance.

Safety Assessment

Safety concerns resulting from the event were minimal since the plant responded to the Admission Valve closure as designed and the Reactor Protection System (JC) initiated prompt control rod insertion. No other Engineered Safety Feature (JE) were initiated in mitigation of the event.

MI0989-0370B-BX01

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Document Control Desk
Washington, DC 20555

DOCKET 50-155 - LICENSE DPR-6 - BIG ROCK POINT PLANT - LICENSEE EVENT REPORT 89-008 - REACTOR TRIP RESULTING FROM TURBINE

CONTROL FAILURE

Licensee Event Report (LER) 89-008 (Reactor Trip Resulting from Turbine Control Failure) is attached. This event is reportable to the NRC per 10CFR50.73(a)(2)(iv).

J Daniel Eddy
Plant Licensing Engineer

CC Administrator, Region III, USNRC
NRC Resident Inspector - Big Rock Point

Attachment

OC0989-0007-NL02

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